REMARKS

This responds to the Office Action mailed on September 19, 2005.

Claims 2-5, 8, 12, 13, 18, 19, 28, 29, 32, 39, 42-70, 75, 77, and 78 are amended, no claims are canceled, and no claims are added; as a result, claims are 2-5, 8-10, 12-14, 18- 20, 28, 29, 32, 35, 36, 39-71, and 73-78 now pending in this application. The amendments to the claims are fully supported by the specification as originally filed. No new matter is introduced. Applicant respectfully requests reconsideration of the above-identified application in view of the amendments above and the remarks that follow.

Support for the amendments may be found in the specification, for example, on page 24, lines 1-6, on page 26, lines 1-7, and on page 27, lines 11-22.

Communication of Co-pending Related Cases

Application brings to the attention of the Examiner, the co-pending commonly assigned U.S. Patent Applications, serial numbers 10/231,687, 10/461,593, and 10/789,203 claiming priority from the instant patent application. Office Actions have been issued in these cases.

§103 Rejection of the Claims

Claims 2-5, 8-10, 12-14, 19, 20, 28, 29, 32, 35, 36, 40-43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71 and 75-77 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura et al. (U.S. 5,438,211) in view of Wakai et al. (U.S. 5,032,883). Applicant traverses these rejections of the claims.

Applicant cannot find in the combination of Nakamura et al. (hereafter Nakamura) and Wakai et al. (hereafter Wakai) a teaching or a suggestion of a floating gate having an electron affinity less than equal to 2.7 eV, as recited in amended claim 28. In the Office Action, it is stated that "Nakamura illustrates ... the floating gate comprising aluminum, which has an electron affinity of about 2.8 about 2.8[1] eV." In the Office Action, it is further stated that "[1][t]he value of the electron affinity of aluminum is based on 'UPS of Negative Aluminum Clusters' by Taylor et al." Applicant respectfully disagrees with this analysis in the Office Action. Taylor relates to studies of negative aluminum clusters, in which Taylor discusses an electron affinity for aluminum clusters having at most 32 aluminum atoms. The electron affinity of 2.8 eV is

associated with clusters of 26 electron atoms, 28 electron atoms, 30 electron atoms, and 31 electron atoms. *See Table 1 of Taylor.* The cited reference, Taylor, is absent data regarding electron affinities for clusters greater than 32 atoms. However, in curve fitting the data, Taylor shows in Figure 3 a positive slope of the curve at the 32 atom data point, indicating increasing value of the electron affinity for clusters of more than 32 atoms. Therefore, Taylor is at least ambiguous with respect to an electron affinity for an aluminum layer having more than 32 atoms.

Further, as is known by those skilled in the art, for a metal, the difference between the vacuum level and the Fermi energy is the work function of the metal. As illustrated in Figure 3 of the specification, the electron affinity may be taken to be the energy difference between the vacuum and the conduction band edge at a surface. *(See also Pierret page 23, lines 9-13).* Applicant submits that an appropriate value for an electron affinity associated with aluminum, which is a metal, is about the value of its work function. The electron affinity of silicon is about 4.2 eV as noted in the specification, for example, on page 13, line 4. The work function for aluminum is about 4.09eV *(See Pierret page 63, Table 4.1, and Michaelson, Tables II and III).* Applicant submits that a value of an electron affinity associated with aluminum in a metal oxide semiconductor structure, as depicted in Pierret (Pierret and Michaelson enclosed with this response), is around a value of 4.1 eV rather than 2.8 eV as proposed in the Office Action.

Applicant cannot find in Nakamura in view of Wakai a teaching or a suggestion of an aluminum layer as a floating gate in a transistor that may be realized by a negative aluminum cluster having at most 32 atoms. As a result, Applicant submits that neither a reference nor objective evidence has been provided in the Office Action that teaches or suggests that Nakamura's aluminum layer has an electron affinity equal to or less than 2.7 eV.

Applicant cannot find in the combination of Nakamura and Wakai a teaching or suggestion of an intergate dielectric between a control gate and floating gate, where the intergate dielectric has a permittivity that is higher than a permittivity of silicon dioxide. In the Office Action, it is stated that

> Nakamura does not show a integrate dielectric has a permittivity that is higher than a permittivity of silicon dioxide. Wakai teaches that it is known in the art to form a transistor in which a SiC active layer is separated form its gate electrode by either silicon dioxide layer or a silicon nitride layer (col. 5, lines 45-62). The use of silicon nitride in place of silicon nitride is considered a substitution of an equivalent material and for that reason is not patentable.

Wakai deals with silicon dioxide or silicon nitride in a thin film transistor. Applicant cannot find in Wakai a discussion of an integrate dielectric between a control gate and a floating gate. Further, Applicant cannot find in Wakai or in Nakamura a suggestion or motivation to use silicon nitride as an integrate dielectric. Applicant respectfully submits that the combination of Nakamura or Wakai has not provided a teaching that silicon nitride is *per se* an equivalent material to silicon dioxide in all applications. Further, no objective evidence is provided in the Office Action to support the above alleged proposition of the Office Action.

Therefore, for at least the reasons discussion above, Applicant submits that Nakamura in view of Wakai does not teach all the elements of claim 28 and that claim 28 is patentable over Nakamura in view of Wakai. For at least reasons similar to those discussed above with respect to claim 28, Applicant submits that the independent claims are patentable over Nakamura in view of Wakai. Further, the dependent claims that depend on these independent claims are patentable over Nakamura in view of Wakai for at least the reasons stated herein.

Applicant respectfully requests withdrawal of these rejections of calms 2-5, 8-10, 12-14, 19, 20, 28, 29, 32, 35, 36, 40-43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71 and 75-77, and reconsideration and allowance of these claims.

Allowable Subject Matter

Claims 18, 39, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 73, 74 and 78 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 73 currently is in independent form and, therefore is patentable. Claim 74 depends on claim 74 and, therefore is patentable.

Claims 18, 39, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, and 78 are amended into independent form including all of the limitations of the base claim and any intervening claims.

Applicant respectfully requests withdrawal of these objections of calms 18, 39, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 73, 74 and 78, and reconsideration and allowance of these claims.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 371-2157 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 19th day of December, 2005.

DAVID R. COCHRAN _____

Name

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Signature